CA214 : Object Oriented Programming with C++

Assignment 3 – Class and Objects

Date :1ˢᵗ August,2020

1.	Write a C++ program to create a class Student which has the following public members, Attributes : id, name, programmename and semester. Methods :void display() (define the method in the class) Instantiate two Students, and set the attributes from main method and display the student details.
2.	Update the program 1, define the method display outside the class.
3.	Update the program 1, make the attributes as private and method as public, create a default constructor to set the id as "19BCAXXX" your student id, name as your name, programme name as "BCA" and semester as 3. Instantiate one student object and display the student details.
4.	Update program 1,create a parameterized constructor to set the id, name, programme name and semester. Instantiate one student object and display the student details.
5.	Update the program 1, create a copy constructor to copy the object values to another object.
6.	Update the program 1, add marks of 5 subjects out of 100, add a method to calculate the grade of student based on the following table.

Percentage	Grade
>=80	A
>=70	B
>=60	C
>=40	D
Marks in any subjects <35 or percentage is <=39	F

7.	Create a class Employee, with the below members, input all the employee details and use a parameterized constructor to initialize 3 employees, calculate their salary and display all the details. Attributes : id,name, designation, basicsalary (HRA=9% of basicsalary, TA=500, PPF=400,PT=5% of basic salary Gross salary=basicsalary + HRA + TA Net salary = Gross Salary – PPF - PT) Method :calculateSalary(),display()
8.	Update the program 7, based on the designation apply the salary details as below,

Designation	Basic salary Details (INR)
Manager	1,00,000 – 5,00,000
Assistant Manager	50,000 – 99,999
Clerk	10,000 – 49,999

While input of data check for correct range of salary based on designation, if the inputted value does not fall in the range display and error message instead of calculating the salary.

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9.	Write a C++ program to create a class Car which has the following members,
	Attributes : Brand (Honda, MG,Ford,Maruti,etc.)
	                Model (Amaze,City,Civic,etc.)
	                Type (Hatchback,Sedan,SUV,etc.)
	                Fuel (Petrol, Diesel, CNG,etc.)
	                Color
	                Price
	Methods :void display() (define the method outside the class)
	Instantiate two Car objects using parameterized constructor.

10.	Update the program 4, add a method addFeatures(), and ask user to input below features.
	        1. Rear camera - 2000 INR
	        2. ABS break - 5000 INR
	        3. Music system - 8000 INR
	        4. Power window – 4000 INR
	        5. Seat covers – 1000 INR
	        6. Extra airbags – Per airbag 500 INR
	        7. Car Insurance – 50,000 INR (1 year)
	Based on the features user wish to select you need to calculate the total onroad price of car and display it.

11.	Update program 7, add and attribute monthly_leave and set it to 1 by defalult, while inputting the salary ask user number of leaves taken in a month, if the leave taken is 0 or 1 the salary is not updated, in case user inputs leave taken as 2 or more, deduct 200 per leave and display the employee details. Use getter and setter methods.
12.	Create a class Course to include details of courses in a given semester , create a method to display the student and course details. (Hint : create a friend function in class Student and Course)